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Client/Matter: 021123-0279062

II. REMARKS

Preliminary Remarks

Reconsideration and allowance of the present application based on the following remarks are respectfully requested. Claims 1, 8, 9, 21, and 24-28 are pending in this application. Claims 8 and 9 have been allowed. Claims 21 and 24-28 remain at issue.

In paragraph 12 of the official action, the examiner objected to claim 1 for having an improper form of a Markush group. The applicants have inserted the word "and" between parts (b) and (c) of claim 1, thereby rendering the objection moot. In light of the following amendment, the applicants respectfully request withdrawal of the objection to claim 1.

The applicants do not intend by these or any amendments to abandon subject matter of the claims as originally filed or later presented, and reserve the right to pursue such subject matter in continuing applications.

Patentability Remarks

Rejection Pursuant to 35 U.S.C. §112, Second Paragraph, Indefiniteness

Claim 21

In paragraph 13 of the official action, the examiner rejected claim 21 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicants regard as the invention. Specifically, the examiner alleged that the phrase "the fragment of at least 30 consecutive nucleotides" in claim 21 is unclear since no particular fragment is indicated.

Amended claim 21 is now directed to an isolated nucleic acid consisting of a fragment of at least 30 consecutive nucleotides of SEQ ID NO: 1 or a fragment of at least 30 consecutive nucleotides of the full complement of SEQ ID NO: 1. The applicants have adopted the examiner's suggestion of replacing the article "the" with "a" in claim 21 for clarity purposes. The examiner has acknowledged in paragraph 19 that claim 21 is directed to allowable subject matter if the minor changes discussed above were performed. In view of the foregoing amendments and remarks, the applicants submit the rejection of claim 21 under 35 U.S.C. §112, second paragraph, has been overcome and should be withdrawn.

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Claims 24-28

In paragraph 14 of the official action, the examiner rejected claims 24-28 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicants regard as the invention. The examiner asserted that the phrase "sensor kinase activity" is unclear. The examiner alleged that the specification on pages 1 and 7 teaches that the *citA* gene encodes for a sensor kinase protein that is part of a two-component system. The examiner further asserted, however, that no other description is found for the *citA* products, including how this functional assignment was made. The examiner concluded that is unclear what the protein is "sensing" and what is the substrate for the "kinase" activity.

Solely for the purpose of expediting prosecution, and without prejudice to the applicants' right to seek broader claims in a continuing application, the applicants have canceled claims 24 and 25 and amended claims 26-28 to be directed to allowable subject matter (as defined by the examiner). In view of the foregoing amendments, the applicants submit that the rejection of claims 24-28 under 35 U.S.C. §112, second paragraph is moot and should be withdrawn.

Claims 25-28

In paragraph 15 of the official action, the examiner further rejected claims 25-28 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicants regard as the invention. The examiner asserted that it is confusing (allegedly) how hybridizing to the complement of claim 1, item c (the complement itself), would encode a protein, let alone a sensor kinase protein.

As discussed above, claim 25 has been canceled without prejudice and claims 26-28 have been amended to be directed to allowable subject matter (as defined by the examiner). In view of the foregoing amendments, the applicants submit the rejection of claims 25-28 under 35 U.S.C. §112, second paragraph with regard to hybridization complement language is moot, and should be withdrawn.

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Rejection Under 35 U.S.C. §112, First Paragraph

Written Description

In paragraph 16 of the official action, the examiner rejected claims 24-28 under 35 U.S.C. §112, first paragraph, written description, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The examiner alleged that the applicants have not fully described a genus that has sequence identity limitations in the absence of clear functional limitations so that one of skill in the art would be able to predict the other members of the claimed genus. The examiner asserted, however, that with the clarification of the term "sensor kinase activity," as noted above, the instant rejection would be withdrawn.

As discussed above, the applicants have canceled claims 24 and 25 without prejudice, and amended claims 26-28 to be directed to allowable subject matter (as defined by the examiner). In view of the foregoing amendment, the applicants submit that the rejections of claims 24 and 25 under 35 U.S.C. §112, first paragraph, for allegedly lacking written description, is moot and should be withdrawn.

Enablement

In paragraph 17 of the official action, the examiner rejected claims 24-28 under 35 U.S.C. §112, first paragraph, scope of enablement, because the specification, while being enabling for SEQ ID NO:1 and a polynucleotide encoding SEQ ID NO:2, does not reasonably provide enablement for polynucleotides structurally similar and functionally the same. The examiner alleged that to make polynucleotides structurally similar to SEQ ID NO:1 and still encode functional sensor kinase polypeptides would require undue experimentation. The examiner alleged the instant specification teaches SEQ ID NO:2, a sensor kinase protein from *C. glutamicum*, and SEQ ID NO:1, a *C. glutamicum* gene exactly encoding SEQ ID NO:2. The examiner further asserted that the instant specification may describe and enable means for identifying other *citA* genes using hybridization methods, etc., but these methods do not enable one of skill in the art to make all, or a relevant portion of, the polynucleotides within the scope of the claims because the ability to find a *citA* gene, which is structurally related to SEQ ID NO:1, is not equivalent to the ability to make a *citA* gene as required by the statute (*i.e.*, "make and use"). The examiner further alleged there is no description in the specification or the art which provides particular residues whose encoding

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is important within the disclosed sequence so that its *citA*-nature is maintained. The examiner alleged it is unclear from the specification if SEQ ID NO:2 is a sensor kinase like *citA* from *K. pneumoniae*. The examiner concluded by stating that none of the basic sequence structural motifs for *citA* gene exist in SEQ ID NO: 2 although extensive work by Gerharz *et al.* (Biochemistry (2003) 42: 5917-5924) and Reinelt *et al.* (J. Biol. Chem. (2003) 278(40): 39189-39196) identified basic structures in the *citA* genes from various sources.

The applicants respectfully submit that BLAST search results of the amino acid sequence of SEQ ID NO: 2 identified a number of amino acid sequence encoding two component sensor kinases in genetically related bacterial species *Corynebacterium efficiens*, *Streptomyces coelicolor*, and *Bacillus halo* with similar sequence motifs as discussed above (see Appendix). Nevertheless, the applicants have canceled claims 24 and 25 without prejudice and amended claims 26-28 to be directed to allowable subject matter (as defined by the examiner). In view of the foregoing amendments and remarks, the applicants respectfully submit the rejection of claims 24-28 under 35 U.S.C. §112, first paragraph, for allegedly lacking enablement is moot and should be withdrawn.

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III. CONCLUSION

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains at issue which the examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Respectfully submitted,

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